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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,657	09/19/2003	Yong Rui	304950.01	4632

7590 09/08/2008

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EXAMINER	
WORJLOH, JALATEE	
ART UNIT	PAPER NUMBER
3685	

MAIL DATE	DELIVERY MODE
09/08/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/664,657	RUI ET AL.	
	Examiner	Art Unit	
	Jalatee Worjloh	3685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *1-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the amendment filed May 19, 2008.

2. Claims 1-25 are pending.

Response to Arguments

3. Applicant's arguments filed May 19, 2008 have been fully considered but they are not persuasive.

4. Applicant argues that Tyree does not teach "requiring a computer user to locate at least one feature of said one or more deformed body parts in the image".

5. Applicant argues that Mori does not teach "requiring a computer user to locate at least one feature of said one or more deformed body parts in the image".

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

6. The claim recites "generating a human interactive proof employing an image of one or more deformed body parts wherein certain features thereof are at known locations in said image. However, the claim does not define the phrase "certain features" and the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. What are these certain features? Further, the claim recites "known locations", but no locations were previously identified? What are these locations?

7. Applicant argued that "there is nothing to teaching, motivation or suggestion to combine the teachings of Tyree and Mori". The Examiner notes that KSR forecloses the argument that a specific teaching, suggestion, or motivation is required to support a finding of obviousness. See *KSR*, 127 S. Ct. at 1741, 82 USPQ2d at 1396.

8. Applicant argues that Mori does not suggest locating key points in a distorted body part.

However, the Examiner respectfully disagrees. Figure 5 of Tyree is an illustration of an intelligence test that can be presented to a user. In Tyree, a distorted image is generated and is presented with a distorted image (see Fig. 5, 502 & paragraph [103] – the graphical image can be generated so as not to be easily recognized using image recognition technology). A challenge prompting and querying the user to input is provided, which is a requirement. The inputted information is compared and it is determined whether or not the user is a human or computer program. Mori discloses an algorithm for locating key points within an image of a body (see page 1). It would be obvious at the time the invention was made to substitute the body image of Mori with a distorted image because the simple substitution of one known element for another producing a predictable result renders the claim obvious.

9. Applicant argues that neither Tyree nor Mortlock teaches the limitations of Claim 23.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

10. Applicant argued that there is nothing to teaching, motivation or suggestion to combine the teachings of Tyree and Mortlock. The Examiner notes that KSR forecloses the argument that

a specific teaching, suggestion, or motivation is required to support a finding of obviousness. See *KSR*, 127 S. Ct. at 1741, 82 USPQ2d at 1396.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 1-4, 7-11, 13, 17-19, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tyree US PGPUB 2002/0120853 (hereinafter referred to as Tyree) in view of Greg Mori et al. "Estimating Human Body Configurations using Shape Context Matching" from the 2001 IEEE Computing Society's Conference on Computer Vision and Pattern Recognition (hereinafter referred to as Mori).

> Claim 1 of the application recites:
>
> A computer-implemented process for determining whether a computer user is a human or a computer program, comprising the process actions of:

generating a human interactive proof ([0034], [0039], [0072], [0103]) employing an image ([0029], [0102], [0103]) of one or more body parts wherein certain features thereof are at known locations in said image;

requiring a computer user to locate ([0029]) at least one feature of said one or more body parts in the image;

comparing the computer user's locations of said at least one feature of said one or more body parts to their actual location in the image; and

determining whether the computer user is a human or a computer program ([0042], [0072], and [0074]).

Tyree discloses the exemplary embodiment of an intelligence test which offers an image and prompts the user to answer a question about said image ([0102]), which is then compared with the stored answer ([0103]). It does not however discuss an image which contains body parts, and location of such parts. The security of any human interactive proof is contingent upon the ability of the algorithm to correctly identify elements within the produced tests for comparison with user input. The Mori paper discloses an algorithm for locating key points within an undistorted image of a body (paragraph 1, pg 1). The basic image then would be understandable to the program prior to its distortion. After transformations (which are known to the program) are applied, the resultant image would not be identifiable by body/facial

recognition software of the time. As for feature where the body parts are deformed, Tyree generating and presenting distorted graphical images (see paragraph [0103]). It would be obvious at the time the invention was made to substitute the body image of Mori with a distorted image because the simple substitution of one known element for another producing a predictable result renders the claim obvious. Also, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the two in order to increase the level of security offered by the "test", thus improving the marketability of the software product as a whole.

Referring to claim 2, Mori discloses wherein said deformed body parts is a human face see section 5, pg 5 and claim 1 above).

Claim 3 of the application recites:

The computer-implemented process of Claim 1 wherein said one or more deformed body parts is an entire human body.

The additional limitation of a human body is taught by Mori (section 1, paragraph 1, pg 1 and claim 1 above).

Claim 4 of the application recites:

The computer-implemented process of Claim 1 wherein said one or more deformed body parts is an animal.

The additional limitation of an animal is disclosed by Mori (section 1, paragraph1, pg 1; claim 1 above).

Claim 7 of the application recites:

The computer-implemented process of Claim 1 wherein the process action for determining whether the computer user is a human or a computer program comprises using a comparison of the computer user's locations of said at least one feature of said one or more body parts to the location of said features in the image.

Tyree teaches a system which includes a comparator for comparing the expected answer of a given "test" with the answer provided by the user (claim 18). Utilizing the images of body parts disclosed earlier by Mori, the challenge put forth by the validating program ([0102]) could reasonably consist of identifying and locating parts of the image. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of Tyree with the recognition system of Mori, to improve the marketability of the software product by providing a slightly different form of test challenge.

Claim 8 of the application recites:

The computer-implemented process of Claim 1 wherein the computer-user-identified feature locations are specified by the user, using a computer pointing device.

The limitation of identifying locations in an image using an input device is met by Tyree who discloses querying a user for user input regarding the challenge, within an input field, which can reasonably be construed as the clickable region of an image map. Furthermore Tyree describes computer having input devices which include a mouse or other pointing device ([0096]), thus meeting the additional limitation of a computer pointing device. Mori's algorithm discloses automated feature location (section 1, paragraph 1, pg 1). It would have been obvious to one of ordinary skill in the art to combine the two to improve efficiency of the human interactive proof by allowing a user to click on features rather than typing them out.

Claim 9 of the application recites;

The computer-implemented process of Claim 8 wherein the computer

Pointing device is one of:

a mouse; and

a digital pen.

The limitation of a pointing device is taught by Tyree's disclosure of computer input devices ([0096]).

Claim 10 of the application recites:

A system for creating a Human Interactive Proof using an image of a face,

the system comprising:

a general purpose computing device ([0092] – [0095]); and

a computer program comprising program modules executable by the computing device, wherein the computing device is directed by the program modules of the computer program ([0098] – [0099]) to,

generate a human interactive proof employing an image ([0029], [0034], [0072], and [0103]) of a deformed human face wherein certain features are at known locations in said image;

require a computer user to locate ([0029]) certain features of said deformed face in the image;

compare the computer user's locations of said features of said deformed face to their actual location in the image; and

determine whether the computer user is a human or a bot ([0042], [0072], and [0074]).

Tyree discloses an intelligence test which offers an image to a potential user and prompts the user to answer a question about said image ([0102]), which is then compared with the stored answer ([0103]). It does not disclose an image which contains a human face, and location of facial features. Mori paper discloses an algorithm for locating key points within an undistorted image of a body (paragraph 1, pg 1), which can be applied to facial recognition (item 1, section 5, pg 5). The basic image then would be understandable to the program prior to its distortion. After transformations (which are known to the program) are applied, the resultant image would

not be identifiable by body/facial recognition software of the time. As for feature where the body parts are deformed, Tyree generating and presenting distorted graphical images (see paragraph [0103]). It would be obvious at the time the invention was made to substitute the body image of Mori with a distorted image because the simple substitution of one known element for another producing a predictable result renders the claim obvious. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the two in order to increase the level of security offered by the "test", thus improving the marketability of the software product as a whole. As for

Claim 11 of the application recites:

The system of Claim 10 wherein the image is automatically synthesized.

Tyree does not explicitly disclose automated image synthesis it does discuss a random test generator that determines an expected answer ([0039]). The Mori paper teaches an algorithm for automatically determining features on an image of a human body. It is necessary for the test generator of Tyree to have the capability of determining the answer to the test, in this case the location of body parts within the image. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the test generator of Tyree with the automated process of Mori in order to improve efficiency.

Claim 13 of the application recites:

The system of Claim 10 wherein the module to determine whether a computer user is a human or a bot determines that the computer user is a human if the computer user's locations of said features are within a given distance from their actual location.

The only additional limitation claim 13 adds to claim 10 is that of the locations of features, which are input by the user, as being within a given distance from their actual location. With regards to a comparison of feature location, there are three possible outcomes for a user's estimated location: it is either within a given distance, outside a given distance, or at the origin/at the actual location. Since a comparison of the estimated features is being made to their actual location already it would be obvious to one of ordinary skill in the art at the time of the invention to conduct that comparison based on the estimate being within a given distance.

Claim 17 of the application recites:

The system of Claim 10 wherein the determination of whether the user is a human or a computer program is made without human intervention.

The limitation of lack of human intervention is taught by Tyree as a comparator component of the system ([0039]).

Claim 18 of the application recites:

The system of Claim 10 wherein the user points to the feature points with a computer input device.

Additionally Claim 19 recites:

The system of Claim 18 wherein the computer input device is a mouse.

The Tyree publication discloses the limitation of identifying locations in an image using an input device by querying a user for input regarding the challenge, within an input field, which can reasonably be construed as the clickable region of an image map.

Claim 21 of the application recites:

The system of Claim 10 wherein the image size is 512 x 512 pixels.

The examiner takes official notice that it would have been obvious to one of ordinary skill in the art of image manipulation at the time of the invention to generate, crop, resize, or otherwise manipulate the image of claim 10 to the size of 512 x 512 pixels.

Claim 22 of the application recites:

The system of Claim 10 wherein the image in the human interactive proof is test image IF with ground truth of face locations and facial feature locations.

The scope of this claim is covered under claim 10's disclosure of generating an HIP employing the image of a human face and having known locations of features within the image. These feature locations are used by the system for comparison ([0034]), to determine authentication and thus it is inherent that ground truth should be represented by these locations. This claim encompasses no additional matter and is therefore rejected under the same premise as claim 10.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tyree in view of Mori and further in view of Luis von Ahn, et al "CAPTCHA: Using Hard AI Problems For Security" (hereinafter referred to as von Ahn), presented at the EuroCrypt 2003 conference in Warsaw Poland.

Claim 5 of the application recites:

The computer-implemented process of Claim 1 wherein said

determination of whether a computer user is a human or a computer program is used for one of:

assigning an email account;

validating an input in a poll;

using a search engine;

using a chat room; and

accessing data on a website. ([0036])

Tyree teaches the concept of using a human interactive proof to control access to network resources and storage ([0036]). The von Ahn paper goes further to describe the use of HIP for Online polls (pg 1, section 1, paragraph 2), Email account services (section 1, paragraph 1, pg 2), and Search Engines (section 1, paragraph 2, pg 2). All of these are examples of network resources and storage facilities. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the HIP for controlling access to many types of internet accessible resources to expand the usefulness of the proof generating software and thus improve its overall marketability

14. Claims 12, 16, 20 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tyree in view of Mortlock et al, US Patent 6,549,200 (hereinafter referred to as Mortlock).

Claim 12 of the application recites:

The system of Claim 10 wherein the image is a distorted face embedded in a cluttered background

The applicant discloses that it is known in the art to put an image of a distorted word on a cluttered background image ([0006]). The applicant does not disclose the image of a face on a cluttered background. The Mortlock patent discloses the ability to create an image of a human head/face. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the applicant's disclosed image, with that of Mortlock's facial image in

order to expand the variety of images that can be used in an HIP system. Increasing the variety of usable images will increase security offered by the system and therefore its marketability.

Claim 16 of the application recites:

The system of Claim 10 wherein the image is generated to include at least one of:

non-frontal faces;

faces that is non-symmetrical;

various lighting and shading conditions; and

a background that contains face-like clutter.

It has been established with regards to the previous claim that putting text on a distorted text ([006]), and that it would have been obvious to combine this with the facial image creation of Mortlock. Mortlock discloses the limitations of on-frontal faces (fig 4Fig 3A, Fig 13), and pictures with varied lighting effects (column 13, lines 32-34). It would have additionally been obvious to one of ordinary skill in the art to one of ordinary skill in the art of graphic design, to manipulate the facial images of Mortlock to make them non-symmetrical. Including these features in the HIP would improve its ability to deter non-human users and thus improve it offers, and make it more marketable.

Claim 20 of the application recites:

The system of Claim 10 wherein the inputs to generate the image are a 3D wire model of a generic head and a cylindrical texture map *Tm* of an arbitrary person.

Tyree discloses a computer means for creating human interactive proof images ([0029], [0034], [0072], and [0103]). It does not discuss the manner in which these images are created. The creation of 3-d images utilizing wire models was will known in the art of graphics creation at the time of invention and the creation of such images is discussed by Mortlock. Mortlock discloses a wire frame which is covered in a texture map (fig 3A, column 1, lines 23-25, column 2, and lines 17-52) used to create an image of a human head/face. This texture map can be cylindrical (column 20, lines 11-14) among other shapes. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the HIP system of Tyree with the 3-D graphics creation technique of Mortlock in order to improve the security and therefore the functionality of the system, by using non-textual images which would make it difficult for automated scripts which are used to attempting to decode the textual image.

Claim 23 of the application recites:

A computer-readable medium having computer-executable instructions for creating a test to determine whether a user is a person or a bot, said computer executable instructions comprising:

inputting a 3D wire model of a generic head and a texture map of an arbitrary person; and

generating a human interactive proof using said generic head model and texture map.

Claim 23 is essentially the software product for the system of claim 20. It discloses no new limitations and as such is rejected for the same reasons as claim 20.

Claim 24 of the application recites:

The computer-readable medium of Claim 23 wherein the human interactive proof employs an image of a deformed human face in which certain face features are at known locations in said image.

The limitation of known positions of facial features is disclosed by Mortlock as "known points" (column 14, table 1, column 13 lines 20-30 & see claim 1 rationale regarding deformed images).

Claim 25 of the application recites:

The computer-readable medium of Claim 24 wherein a comparison of the locations of said features input by a user is made to their actual location in the image and is used to determine whether the user is a human or a bot.

Tyree discloses an intelligence test which offers an image to a potential user and prompts the user to input the answer to a question about said image ([0102]), which is then compared with the stored answer ([0103]). Mortlock discloses known points in the facial region such as

eyes, ears, nose (column 14, table 1). The location of these points in the basic image then would be understandable to the program prior to its distortion. After transformations (which are known to the program) are applied, the resultant image would not be identifiable by body/facial recognition software of the time. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the two in order to increase the level of security offered by the "test", thus improving the marketability of the software product as a whole.

15. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tyree in view of Mortlock and further in view of Mori.

Claim 14 of the application recites:

> The system of Claim 10 wherein the features of the face comprise the four corners of the eyes and the two corners of the mouth.

Mortlock discusses a method for creating an image of a human head/face from a wire model and a texture map (Fig 3A, column 1, lines 18-21) as well as the known points of eyes, ears, chin, etc (column 14, table 1). Regarding the limitation of the facial feature of the four corners of the eyes, Mortlock shows texture maps of the two eyes, trimmed at the inner and outer corners. In order for such trimming to occur from a larger photograph input, it is inherent that the system of Mortlock have the ability to discern the position of the four corners of the subject's eyes (Fig 3A #27). Though the chin and larynx are disclosed as known locations, the two corners

of the mouth are not. The Mori, paper discloses an algorithm for locating key points on a human body (abstract, page 5 section 5, item 1). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the HIP system of Tyree with the facial image of Mortlock, and the feature recognition of Mori, in order to create an HIP that offers a wide range of potential answer choices, improving its security and thus its functionality.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- "Up to the Challenge: Computer Scientists Crack a Set of AI-based Puzzles" to Robinson.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kyle whose telephone number is 571 272-6746. The examiner can normally be reached on 9-5, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Kyle can be reached on 571 272-6747. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jalatee Worjloh/
Primary Examiner, Art Unit 3685